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FACULTY WORKING
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Organizational Learning

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Organizational Learning

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ORGANIZATIONAL LEARNING

Abstract

No theory or model of organizational learning has widespread acceptance. This paper clarifies the distinction between organizational learning and organizational adaptation and shows that change does not necessarily imply learning. There are different levels of learning, each having a different impact on the strategic management of the firm.

Systematic assessment of the strategic management literature suggests an interesting dilemma: although there exists widespread acceptance of the notion of organizational learning and its importance to strategic performance, no theory or model of organizational learning is widely accepted. Major research programs (Chandler, 1962; Duncan, 1974; Jelinek, 1979; Miles and Snow, 1978; Miller and Friesen, 1980; Shrivastava, 1981) along with more modest efforts provide the basis for initial attempts to define, to develop, and to differentiate organizational learning and its components. Each has approached the subject from different perspectives, leading to more divergence.

The confusion stems as far back as two decades ago, when Simon (1969) defined organizational learning as the growing insights and successful restructurings of organizational problems by individuals reflected in the structural elements and outcomes of the organization itself. In this definition learning consists of the development of insights on the one hand, and structural and other action outcomes on the other. One is a change in states of knowledge - not clearly perceptible; the other often involves a change more easily visible in terms of an organizational outcome. And most important, the two often do not occur simultaneously, which makes the problem of distinguishing between them all the more important.

As a result of this confusion, theorists have referred to learning as either (1) new insights or knowledge (Argyris and Schon, 1978; Hedberg, 1981); (2) new structures (Chandler, 1962); (3) new systems (Jelinek, 1979; Miles, 1982); (4) mere actions (Cyert and March, 1963; Miller and Friesen, 1980); or (5) some combination of the above (Bartunek, 1984; Shrivastava and Mitroff, 1982). These phenomena are referred to as learning (Cyert and March, 1963; Jelinek, 1979); adaptation (Chakravarthy, 1982; Meyer, 1982);

change (Dutton and Duncan, 1983; Mintzberg and Waters, 1982); or unlearning (Starbuck, Greve, and Hedberg, 1978).

In all instances the assumption that learning will improve future performance exists. The problem emerges around a clear definition of learning and the measurement of it. Our purpose is to clarify these issues of definition so that we can build a better theory and understanding of the process. To aid our readers in this confusion, we suggest an initial definition for the reading of this paper: Organizational learning means the process of improving actions through better knowledge and understanding.

This paper will examine the theoretical development of the concept of organizational learning and will suggest a framework that allows the clarification needed to develop a solid stream of research. It identifies points of agreement: the importance of organization/environment coalignment, the difference between individual and organizational learning, and the contextual factors of organizational learning. It distinguishes among the various combinations of organizational learning, adaptation, and change discussed in the literature. Dimensions of these phenomena are suggested that point to similarities and differences, rather than relying on the current use of general labels (like adaptation and learning) that carry multiple and confusing interpretations.

Areas of Consensus

There are several areas where there appears to be some agreement or consensus regarding a theory for organizational learning. We will address these first in order to lay the groundwork and the foundation for our discussion of areas

where there is still divergence. We intend to focus on major concepts rather than to attempt an exhaustive literature review for each of these areas.

Environmental Alignment

Convergence exists on the importance of alignment. Theorists such as Chandler (1962), Katz and Kahn (1966) and Thompson (1967) have argued that the ultimate criterion of organizational performance is long-term survival and growth. To achieve this, organizations align with their environments to remain competitive and innovative (Barnard, 1938; Lawrence and Dyer, 1983; Lawrence and Lorsch, 1967; Thompson, 1967). Hence a key premise of strategic management is alignment between the organization and its environment that maintains the competitiveness and the survival of the firm over the long run (Hambrick, 1983; Summers, 1980).

Alignment implies that the firm must have the potential to learn, unlearn, or relearn based on its past behaviors. The works of Chakravarthy (1982), Chandler (1962), Cyert and March (1963), Hambrick (1983), Miles and Snow (1978) and Miller and Friesen (1980) recognize the widespread acceptance of this premise. In fact, Chakravarthy (1982) argues that organizational adaptation is the essence of strategic management because it is the key activity for dealing with changes occurring in the environment and involves the continuous process of making strategic choices. Organizations have leeway and choice in how they adjust to a changing environment and this leads to the capacity of organizations to learn over time (Miles, 1982). Thus, organizational performance affects the organization's ability to learn and to adapt in a changing environment.

Individual vs. Organizational Learning

Some agreement exists that we must make distinctions between individual and organizational learning. Though individual learning is important to organizations, organizational learning is not simply the sum of each member's learning. Organizations, unlike individuals, develop and maintain learning systems that not only influence their immediate members, but are then transmitted to others by way of organization histories and norms (Lawrence and Dyer, 1983; Martin, 1982; Mitroff and Kilmann, 1976). Hedberg (1981) states it this way:

Although organizational learning occurs through individuals, it would be a mistake to conclude that organizational learning is nothing but the cumulative result of their members' learning. Organizations do not have brains, but they have cognitive systems and memories. As individuals develop their personalities, personal habits, and beliefs over time, organizations develop world views and ideologies. Members come and go, and leadership changes, but organizations' memories preserve certain behaviors, mental maps, norms, and values over time. (Hedberg, 1981, p.6)

Much of the individual learning theory that deals with repetition of speech and motor skills does not characterize organizational learning where, at least at the strategic level, situations are mainly unique and non-repetitive. Learning enables organizations to build an organizational understanding and interpretation of their environment and to begin to assess viable strategies (Daft and Weick, 1984; Donaldson and Lorsch, 1983; Starbuck, Greve and Hedberg, 1978). It results in associations, cognitive systems, and

memories that are developed and shared by members of the organization.

Contextual Factors

Four contextual factors affect the probability that learning will occur: corporate culture conducive to learning, strategy that allows flexibility, an organizational structure that allows both innovativeness and new insights, and the environment. These have a circular relationship with learning in that they create and reinforce learning and are created by learning.

Culture. An organization's culture manifests itself in the overriding ideologies and established patterns of behavior (Martin, 1982; Schein, 1983). Thus, culture consists of the shared beliefs, the ideologies, and the norms that influence organizational action-taking (Beyer, 1981; Pfeffer, 1979; Mitroff and Kilmann, 1976). In fact, Kets de Vries and Miller (1984) suggest that the culture can be used to predict the actions taken. This is supported by Miles and Snow (1978) who demonstrate that a firm's choice of strategic posture (defender, prospector, etc.) is tied closely to its culture, that broad belief systems partially determine strategy and the direction of organizational change. Clearly, these norms will influence the behavioral and cognitive development that the organization can undergo. In turn, change and/or learning in organizations often involves a restructuring of those broad norms and belief systems (Argyris and Schon, 1978; Dutton and Duncan, 1982, 1983; Jelinek, 1979; Shrivastava and Schneider, 1984).

Strategy. The organization's strategic posture partially determines its learning capacity. Strategy determines the goals and objectives and the breadth of actions available for carrying out the strategy. Thus strategy influences learning by providing a boundary to decision-making and a

context for the perception and interpretation of the environment (Chandler, 1962; Cyert and March, 1963; Daft and Weick, 1984). Similarly the strategic options that are perceived are a function of the learning capacity within the organization (Burgelman, 1983).

The strategic posture also creates a momentum to organizational learning. Miller and Friesen (1980) stress that the firm's strategic direction creates a momentum that is pervasive and highly resistant to small adjustments. Reorientations and adjustments occur as widespread revolutions that affect entire strategies.

Structure. Though often seen as an outcome of learning, the organization's structure plays a crucial role in determining these processes. Duncan (1974) points out that different decision-making structures are needed in the same organizational unit, depending on the degree of flexibility that is required: a centralized, mechanistic structure tends to reinforce past behaviors whereas an organic, more decentralized structure tends to allow shifts of beliefs and actions. By reducing the information demands, the decentralized structure reduces the cognitive workload of the individuals, thereby facilitating the assimilation of new patterns and associations (Galbraith, 1973). Functional organizations may be efficient but are less likely to adapt; hence, questions of adaptability emerge around issues of differentiation (Hrebiniak and Joyce, 1984; Starbuck, Greve and Hedberg, 1978; Vancil, 1978). In fact Meyer suggests that "formalized and complex structures retard learning but that learning is enhanced by structures that diffuse decision influence" (1982:533). Hence organizations can be designed to encourage learning and reflective action-taking but this generally means moving away from mechanistic structures (Morgan and Ramirez, 1983).

Environments. If either the internal or external environment

is too complex and dynamic for the organization to handle, an overload may occur, and learning will not take place (Lawrence and Dyer, 1983). Hedberg (1981) suggests that "learning requires both change and stability between learners and their environments." Although too much stability within an organization can be dysfunctional - there is little inducement to learn and/or change if established behaviors never grow obsolete - too much change and turbulence make it difficult for learners to map their environment (March and Olsen, 1975).

The process of learning involves the creation and manipulation of this tension between constancy and change; in fact, a certain amount of stress is a necessity if learning is to occur (Cangelosi and Dill, 1965; Hedberg et al., 1976). The level of stress and the degree of uncertainty about past successes determine the effectiveness of the conditions of learning discussed, and they also influence how the environment is perceived and interpreted (Daft and Weick, 1984; Starbuck, Greve, and Hedberg, 1978; Weick, 1979).

Concept of Learning

As was mentioned earlier, much of the confusion in the literature on organizational learning stems from the use of a number of terms that are only loosely associated with underlying concepts. Change, learning, and adaptation have all been used to refer to the process by which organizations adjust to their environment. The problem is that these terms have not been used consistently with the same meanings. As a result, the organizational learning literature is full of multiple interpretations of the concept. The following are examples of this.

Hedberg (1981) suggests that it is misleading to equate learning with adaptation, the former involving the understanding of reasons beyond the immediate event, the latter being

simply defensive adjustment. Yet he emphasizes that in one form of 'learning', behavior requires no understanding. This implies that simple adaptation (with no understanding of causal relationships) may be a part of learning, but that learning can involve a great deal more.

On the other hand, Meyer (1982) uses the term 'adaptation' to refer to two forms of organizational adjustment that both involve some understanding of action/outcome causal links: deviation-reducing adaptation occurs when there is understanding within a given framework, a given set of organizational norms, and deviation-amplifying adaptation involves the creation of new causal relationships built on a new base of assumptions. Both of these types of adaptation form part of what Hedberg (1981) calls levels of learning.

Two basic dimensions appear with some consistency in the literature. One has to do with the content of learning. Is the adjustment a process affecting primarily an organization's interpretation of events (Daft and Weick, 1984), the development of shared understanding and conceptual schemes among members of the organization (Hedberg, 1981)? Or does organizational learning refer to the new responses or actions that are based on the interpretations (Daft and Weick, 1983)? For the framework developed in this paper, the former will be called cognition development and the latter, behavior development.

The other important dimension that emerges refers to the extent of cognitive development, and has to do with the level at which this development takes place. Does the process merely serve to adjust parameters in a fixed organizational structure; or does the development redefine the rules and change the norms, values and world views (Argyris and Schon, 1978; Bateson, 1972)? This paper will use the typology introduced by Bateson (1972) and Argyris and Schon (1978) and

developed by Hedberg (1981) to address this important dimension: lower-level and higher-level learning.

Content of Learning

As was already stated, the content produced by the process of organizational adjustment may be defined as the patterns of cognitive associations developed by the organization's members (Duncan and Weiss, 1978; Hedberg, 1981; Jelinek, 1979; Pfeffer and Salancik, 1978; Weick, 1979). Alternatively, the content has been viewed as the behavioral outcomes that reflect the patterns and/or cognitive associations that have developed (Daft and Weick, 1984). The distinction is similar to Schein (1983) arguing for three levels of culture: cognitive, behavioral, and artefactual.

However, especially in the context of organizational learning and adaptation, it is essential to note the difference between cognition and behavior, for not only do they represent two different phenomena, one is not necessarily an accurate reflection of the other. Changes in behavior may occur without any cognitive association development; similarly, knowledge may be gained without any accompanying change in behavior. The links between changes in behavior and level of cognitive development may be depicted as in Figure 1 below.

Insert Figure 1 about here

Small changes in behavior will not tend to bring about major cognitive development - the change may be too gradual for clear associations to emerge. Likewise, major changes

in behavior do not imply equally large advances in cognitive development. In fact, one school of thought suggests that action-taking creating change may not be caused by cognitive growth but merely by a need to do something. Creating change may be creating the illusion of learning such that management appears to be in control (Salancik and Meindl, 1984; Starbuck, 1983).

Hedberg (1981) suggests that the development of associations requires both change and stability. Although too much stability and unchanging behavior within an organization can lead to stagnation rather than cognitive growth, the opposite extreme may prove to be an overload for organizational members.

A number of strategic implications may be noted when viewing a firm's position with regard to change and learning and with regard to fit with the environment. For instance, Position A is typical of many bureaucratic firms in which success programs have been firmly engrained: no new learning takes place and no attempts are made to change. The steel industry operated in this position until recently. In fact, Position A may be appropriate in a stable and predictable environment where there is little incentive or need for either change or learning. This may be desirable to maintain strategies where little change is desired, such as within a mature industry with dominant market share. On the other hand, B represents firms that keep taking actions, changing strategies, restructuring but with very little learning taking place. The wave of merger activity during the 1960s represented rapid changes in the form of acquisitions as firms diversified with little learning taking place (Salter and Weinhold, 1979). Also Starbuck, Greve, and Hedberg (1978) describe organizations in crisis as reaching a point where actions are taken in hopes that one will just happen to reduce the crisis. The actions are not based on learning or knowledge of what will work. Position B produces shocks for the organization with little

resulting sense of direction. In an environment where accurate prediction is impossible, B may be a desirable temporary style suggesting a retrenchment strategy to minimize losses. Position C produces few changes but these represent meaningful learning tools. Bartunek's (1984) description of the fundamental changes in the interpretive schemes and in the structures of a religious order illustrate Position C. Change created meaningful modifications in the cognitive development of the organization. New beliefs and interpretive schemes developed. C may be most appropriate in a turbulent environment where renewal and innovation (forms of learning and change) are crucial for survival, but where too much change would cause the organization to lose its sense of direction. Finally, Position D, with its high propensity to change and to learn, may be appropriate in a moderately turbulent environment. The internal complexity and dynamism of such an organization will make it difficult to support a large amount of stress from the external environment. It suggests an invest strategy that produces slack within the organization. Morgan and Ramirez's (1983) description of holographic organizations fit firms at D. They describe organizations that are designed to be constantly changing with few well-defined rules such that the organizations are better at learning, problem formulation, and hence, problem-solving.

Levels of Learning

Within the category of cognition development it is possible to identify a hierarchy based on the level of insight and association building. Two general levels will be referred to as lower- and higher-level learning.

Lower-level learning occurs within a given organizational structure, a given set of rules. It leads to the development of some rudimentary associations of behavior and outcomes, but these are usually of short duration and impact only part of what the organization does. It is a result of repetition

and routine and involves association building. Cyert and March (1963) identify success programs, goals, and decision rules as illustrative of learning based on routine.

Because of this reliance on routine, lower-level learning tends to take place in organizational contexts that are well-understood and where management thinks it can control situations (Duncan, 1974). This apparent control over the environment is more characteristic of lower and middle levels of management than of upper levels, but lower-level learning should not be confused with lower levels within the organization. Any organization level may be involved with this process of learning. The desired consequence of lower-level learning is a particular behavioral outcome or level of performance. Though there may be far-reaching effects, the focus of this learning is on the immediate effect on a particular activity or facet of the organization. Morgan and Ramirez (1983) describe this as "functional rationality"- rationality that is based on learning what has worked in the past on simple, clear-cut problems.

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Duncan (1974) speaks of a process similar to lower-level learning which he calls "behavioral-level learning," that level of learning that is concerned with controlling the firm as it adjusts to the environment - the desired level of learning for routine decisions. Argyris and Schön (1978) refer to it as "single-loop learning," that process that maintains the central features of an organization's "theory-in-use" or set of rules, and restricts itself to detecting and correcting errors within that given system of rules.

Higher-level learning aims at adjusting overall rules and norms rather than specific activities or behaviors. The associations that result from higher-level learning have long-term effects and impacts on the organization as a whole. This type of learning occurs through the use of heuristics, skill development, and insights. It is therefore a more cognitive process than is

lower-level learning which is often the result of repetitive behavior.

The context for higher-level learning typically is ambiguous and ill-defined, making purely repetitive behavior rather meaningless. This ambiguity and environmental complexity characterizes upper management levels of the organization where decision-making norms are at least partially determined, i.e., where higher-level learning usually occurs. Considerable evidence suggests that some type of crisis is necessary for changes in higher-level learning, e.g., a new strategy, a new leader, or a dramatically altered market (Miller and Friesen, 1980; Starbuck, Greve and Hedberg, 1978).

The desired consequence of this type of learning is often not any particular behavioral outcome, but rather the development of frames of reference (Shrivastava and Mitroff, 1982), or interpretive schemes (Bartunek, 1984), new cognitive frameworks within which to make decisions. In fact, "unlearning" may be one of the most important consequences (Nystrom and Starbuck, 1984; Starbuck, 1983).

Sometimes the results of higher-level learning become dysfunctional if it creates the development of superstitions, associations or norms that support dysfunctional behaviors. Superstitions or organizational "success" stories can create the inability or unwillingness to change (March and Olsen, 1976; Pfeffer, 1979). The learning can focus on identifying ways of not changing, not experimenting, game-playing, maintaining the status quo, and avoiding problems (Cyert and March, 1963; Lyles and Mitroff, 1980; Nystrom and Starbuck, 1984). This may become very engrained and require shocks, jolts, or crises for unlearning, new higher-level learning, and readaptation to take place (Lawrence and Dyer, 1983; Meyer, 1982; Nystrom and Starbuck, 1984).

Discussion

A commonly expressed belief in the strategic management literature is that organizations do learn and adapt and that this will enhance the organization's ability to survive. Consequently one would assume that there is a theoretical framework for looking at learning and determining if it exists and if so, how to improve it. Unfortunately as we have shown, there still exists confusion regarding what is learning and how to distinguish it from unreflective change.

To further demonstrate this, we have compiled a listing of the major works in the stream of research dealing with organizational learning and adaptation (Table 1). Next to each author is listed the label (learning or adaptation) that the author has attached to the particular type of organizational phenomenon in terms of the two underlying dimensions discussed above (content and level).

Insert Table 1 about here

Of this list of fifteen works on learning and adaptation, twelve use the label 'learning'. Of these twelve, seven look at both behavioral and cognitive development; three look only at cognitive and two only at behavioral phenomena. The three works that use the term 'adaptation' range from dealing only with behavioral phenomena (Miller and Friesen, 1980) to the 'highest' level of cognitive development (Meyer, 1982).

This brief review of the literature confirms that there is little consistency in the application of terms to the concepts being examined. The only patterns that can be detected are 1) the prevalence of the term 'learning' over 'adaptation', and 2) the tendency to look at both behavioral and cognitive development regardless of the label.

Theories of higher-level learning are rare. Few instances of it have been observed (Hedberg, 1981; Shrivastava, 1981). What remains unclear is whether this is because it is a rare occurrence, or because theorists have not developed ways of describing and measuring it. Duncan (1974) contrasts what he calls "strategy-level learning" with "behavioral-level learning." The former has more to do with the development of learning rules, but he determines the level largely on the basis of formality of the learning process. Argyris and Schon (1978) refer to this higher level as "double-loop learning": resolving incompatible organizational norms by setting new priorities and weighting of norms or by restricting norms altogether. Bartunek (1984) provided some insights in the measurement of higher-level learning by demonstrating the process by which changes in higher-level learning are intertwined with structural change and by demonstrating the depth of analysis that is necessary to observe higher-order learning.

Insert Table 2 about here

Table 2 summarizes the preceding discussion of the levels

of organizational learning and identifies a number of activities that may be categorized according to whether they represent lower- or higher-level learning processes.

Lower-level Learning: Focused learning that may be mere repetition of past behaviors - usually short term, surface, temporary, but with associations being formed. Captures only a certain element - adjustments in part of what the organization does. Single-loop. Routine level.

Higher-level Learning: The development of complex rules and associations regarding new actions. Development of an understanding of causation. Learning that affects the entire organization. Double-loop learning. Central norms, frames of reference, and assumptions changed.

One difficulty lies in the fact that when an incremental change has been made in the organizational structure, it is difficult to assess if it is merely a change or if it is a response based upon understanding the relationship of that response to environmental events and/or past actions. Making organizational changes or adjustments does not and should not automatically assume the existence of learning. Another difficulty is that organizational learning relies upon the people and groups as the agency for the transferral of associations, meanings, world-views and ideologies (Hedberg, 1981). In order to determine learning one must rely on the statements or actions of individuals or groups representing the organization, and one must separate behavioral and cognitive development from each other and from mere action-taking or change.

These are difficulties which will have to be overcome if there is to be further development of a theory of organizational learning. Certainly a first step is the recognition of their existence. The second step is reaching agreement about the meanings of the words used. To aid in resolving this dilemma, we would like to suggest definitions for learning and adaptation that incorporate the prior discussion:

Learning: The development of insights, knowledge, and associations between past actions, the effectiveness of those actions, and future actions.

Adaptation: The ability to make incremental adjustments as a result of environmental changes, goal structure changes, or other changes.

Conclusions

Organizational adjustment, whatever its form, is a critical element of strategic management. Recent longitudinal studies (Mintzberg and Water, 1982; Lawrence and Dyer, 1983) demonstrate the importance of analyzing the adjustment decisions a firm makes over time. It is also important to analyze whether these decisions demonstrate unreflective action-taking or in-depth understanding of past actions.

The literature survey above suggests that this distinction has been observed - seven of the fifteen works refer to (versions of) both behavioral and cognitive development. The survey does indicate, however, that there is considerable inconsistency in what is being observed and how it is being measured. What is called 'learning' in one, is 'adaptation' in another, and

'action' in yet a third.

Once we accept that organizational learning and change may be two different processes, the dilemma becomes a measurement problem. Behavioral adaptation can be measured by changes in management systems, decisions, and the allocation of resources. Organizational learning which represents changing associations, frames of reference, and programs begs a methodology that demands a more in-depth look at the functioning of the organization. In order to measure lower-level learning, we can look at changes in the systems, etc., but to distinguish it from purely behavioral adaptation, we need to know if association development has occurred.

We find the area of research focusing on higher-level learning particularly relevant to strategic management since it is this level of learning that will impact a firm's long-term survival. Some research questions that we might propose are:

- (1) Are certain activities, such as experimentation, unlearning, strategic problem formulation characteristic of organizations with more developed higher-level learning?
- (2) How do organizations develop discrimination skills which distinguish whether a past success program (lower-order learning) is appropriate and when it is not?
- (3) Is momentum characteristic of higher-level learning as well as lower-level learning?
- (4) Do diversified firms have better skills for higher-level learning than single business firms? or visa versa?
- (5) Is higher-level learning more characteristic of global firms that operate in a multifaceted, complex environment?

To apply the concepts developed in this paper means developing methods for measuring learning that are more than mere observations of changes taking place. This is particularly essential for learning involving strategic management where situations are frequently unique, ambiguous, and have different interpretations. Learning would necessitate experimentation, unlearning of past methods, and encouraging multiple viewpoints and debate (Nystrom and Starbuck, 1984). The guidance of this process is an essential element of the executive function (Andrew, 1980) - to ensure that learning is occurring and to assure the organization's long-term survival. The measurement and analysis of this process is an essential element of the researcher's function. Researchers can help to guide organizations and executives by developing better methods for distinguishing between types and levels of organizational learning.

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Figure 1

Learning and Change

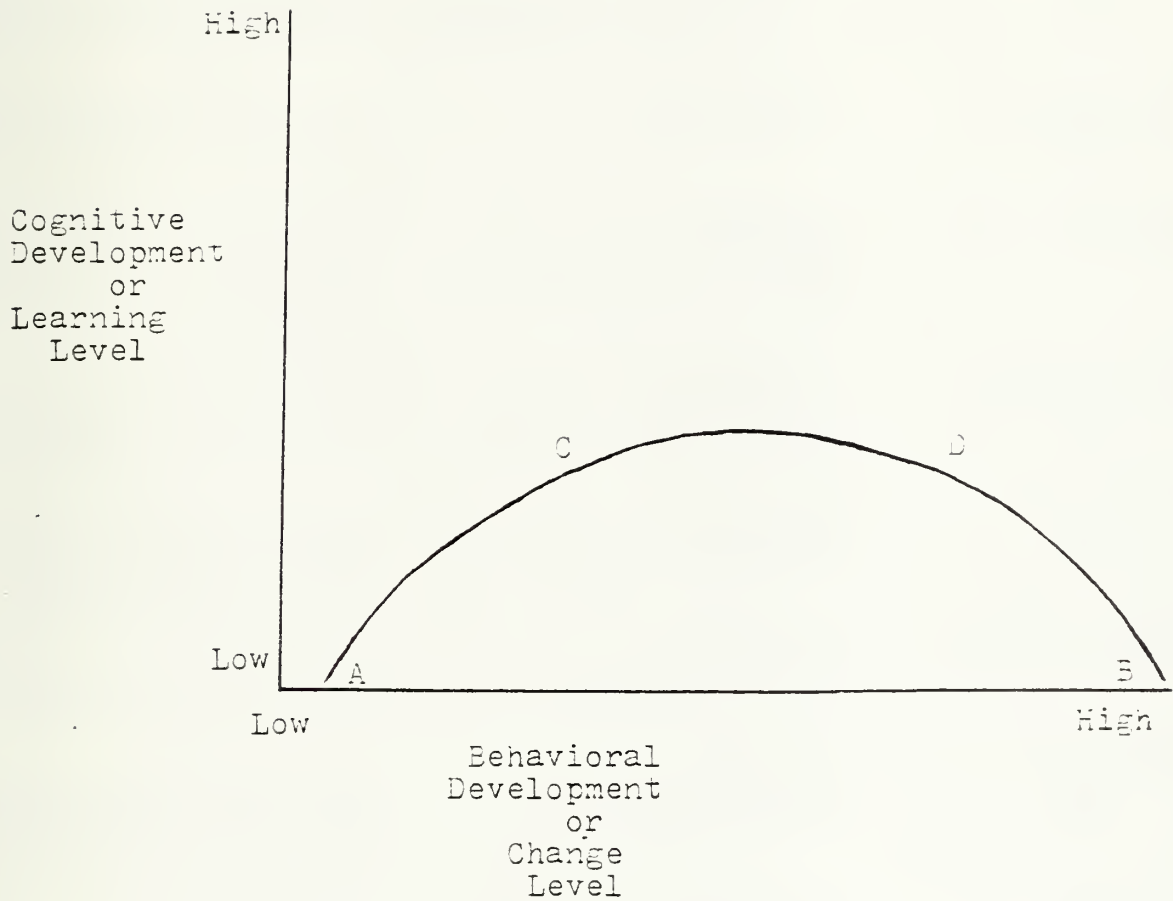


Table 1

A Review of Organizational Learning

<u>Author</u>	<u>Label</u>	<u>Learning</u>
Argyris & Schon 1978	<u>LEARNING</u> Single-loop Double-loop	Lower-level Cognition Higher-level Cognition
Cangelosi & Dill 1965	<u>LEARNING</u> Interaction between individual & group adaptation	Cognitive and Behavioral Development
Chakravarthy 1982	<u>ADAPTATION</u>	Cognitive Development
Cyert & March 1963	<u>LEARNING</u> Adaptation of goals, attention rules and search rules	Behavioral Development
Daft & Weick 1984	<u>LEARNING</u> Action after inter- pretation	Behavioral Development
Duncan 1974	<u>LEARNING</u> Behavioral level Strategy level	Behavioral Development Cognitive Development
Duncan & Weiss 1978	<u>LEARNING</u> Action-outcome Relationships	Cognitive Development
Hedberg 1981	<u>LEARNING</u> Habit-forming Discovery	Behavioral Development Cognitive Development
Jelinek 1979	<u>LEARNING</u> OST-Belief Sharing	Cognitive Development
March & Olsen 1975	<u>LEARNING</u> Rational Adaptation Interpretation	Cognitive Development
Meyer 1982	<u>ADAPTATION</u> Deviation-reducing Deviation-amplifying	Lower-level Cognition Higher-level Cognition

Miles	<u>LEARNING</u>	
1982	Diversification Outcomes	Behavioral Development
	Planning Formalization	Cognitive Development
Miles & Randolph	<u>LEARNING</u>	
1980	Reactive Learning	Behavioral Development
	Proactive Learning	Cognitive Development
Miller & Friesen	<u>ADAPTATION</u>	
1980	Actions	Behavioral Development
Shrivastava &	<u>LEARNING (Systems)</u>	
Mitroff	Evolutionary	Behavioral Development
1982	Designed	Cognitive Development

Levels of Learning

	Lower-Level	Higher-Level
Characteristics	<ul style="list-style-type: none"> . occurs through repetition . routine . control over immediate task, rules & structures . well understood context . occurs at all levels in organization. 	<ul style="list-style-type: none"> . occurs through use of heuristics and insights . non-routine . development of differentiated structures, rules etc. to deal with lack of control . ambiguous context . occurs mostly in upper levels
Consequence	<ul style="list-style-type: none"> . Behavioral Outcomes 	<ul style="list-style-type: none"> . Insights, Heuristics and Collective Consciousness
Examples	<ul style="list-style-type: none"> . Institutionalizes formal rules . Adjustments in management systems . Problem-solving skills 	<ul style="list-style-type: none"> . New missions and new definitions of direction . Agenda setting . Problem-Defining skills . Development of new myths, stories, and culture



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